



# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### Electroplating Machine for Wire Strands

We, SYNCRO MACHINE COMPANY, a Corporation organised under the laws of the State of New Jersey, United States of America, of 611 Sayre Avenue, Perth Amboy, County of Middlesex, State of New Jersey, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a machine for electroplating wire strands.

For many purposes service requirements dictate the deposition of a protective coat on wire. A common example is copper wire, where a tin coating is needed to protect it from sulfur corrosion induced by rubber insulation. Specifications call for a deposit sufficiently heavy to withstand a certain time of immersion in acid of a given strength. The basic requirement is that the machine deposit an adherent coating in a single pass as rapidly as can be done, consistent with satisfying the performance specifications.

In carrying out operations for the electro deposition of metal on wire, the electrical and electro-chemical problems in general reduce to providing solutions which will give the requisite amount of metal in response to a given current density. The need is sometimes met by extending the length of plating tanks. A serious limitation in the operation, rather than being in the electrical or electro-chemical aspects, resides in the mechanical handling of wire in such a process. The truly efficient machine is that which is relatively small yet will deposit satisfactory coats, but with reduced size comes the problem of employing more rapid plating, and thus rapid travel of the wire through the machine. Accordingly the mechanical handling of the wire as it passes through the machine and on the spools comprising the feed and take-up, constitutes a basic problem.

It is a fundamental object of the present invention to provide an electroplating machine of improved efficiency as measured in terms of the unit size of the machine, and its capacity for handling wire.

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It is another object of the invention to provide an electroplating machine and means in the machine for handling the feed and take-up so as to maintain a substantially constant tension of wire passing through the plating machine.

It is another object of the invention to provide an electroplating machine wherein the path of wire through the plating solution is a straight line.

It is another object of the invention to provide a machine for handling and electroplating wire in which a single pass will clean, rinse, electroplate, and rinse the deposit of plate on the wire.

It is a further object of the invention to provide an electroplating machine containing structure permitting a plurality of wires to be fed through the machine and to permit the installation of a given strand of wire of a group passing through the machine.

It is a further object of the invention to provide a machine capable of being stopped during operation without having the section of wire remaining in the machine during stoppage subjected to the deposition of an extra heavy coat of the material being deposited.

The invention accordingly comprises an electro-plating machine for wire strands, having a cleaning and rinsing mechanism, a plating tank and a second rinsing mechanism arranged in series, means for continuously feeding wire from one spool through the machine and taking it up on a second adjacent spool, a linear path being provided for the wire through the machine through said mechanisms and tank thereof at a level below solution level in the plating tank, said machine having driving means for the said spools to keep their surface speeds matched, comprising a shaft carrying two pulleys, arms connecting the axes of said pulleys to the axes of second two free running pulleys in order to carry same at a point removed from the said first two pulleys, separate belts passing over each pair of said pulleys on each set of arms and engaging means for holding each belt against the periphery of each of said spools respectively so that the peripheral speeds of said spools become the

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